AMENDMENTS TO THE CLAIMS

Prior to the present communication, claims 1-24 were pending in the subject application. Each of claims 1–13, 15-18, 21, and 23-24 has been amended herein. Claims 14, 19-20, and 22 have been cancelled and claims 25-31 have been added for consideration. As such, claims 1–13, 15–18, 21, and 23-31 remain pending. It is respectfully submitted that no new matter has been added by way of the present amendments. All claims currently pending and under consideration in the present application are shown below. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) Apparatus for inspecting a moving object, ~~the under side of a vehicle~~ the apparatus comprising:

an array ~~a plurality~~ of cameras located at predetermined positions ~~and angles~~ relative to one another, the cameras in use pointing in the general direction ~~of the area~~ of an object to be inspected; and

image processor ~~processing means~~ provided with

(i) a first module for calibrating the cameras and for altering the perspective of image frames from said cameras and

(ii) a second module for constructing a respective ~~an accurate~~ mosaic image from the ~~said~~ altered image frames of each camera,

wherein cameras in peripheral portions of the array being angled outward compared with cameras toward the center, said perspective correction being performed to correct for the different camera angles for construction of said mosaic image.

2.   (Currently Amended) Apparatus as claimed in Claim 1 wherein the cameras are housed to be deployed stationary on a road surface below a moving vehicle, the cameras in use pointing generally upward ~~with respect to the vehicle~~.

3.   (Currently Amended) Apparatus as claimed in ~~Claim 1 or Claim 2~~ claim 1, wherein the ~~plurality of~~ cameras are arranged in a linear array.

4.   (Currently Amended) Apparatus as claimed in ~~any preceding Claim~~ claim 1, wherein the cameras are arranged to have overlapping fields of view within an expected range of distance to the object to be inspected.

5.   (Currently Amended) Apparatus as claimed in ~~any preceding Claim~~ claim 1, wherein the first module is provided with camera positioning means which calculate ~~the~~ an effective ~~predetermined~~ position of each of said cameras as a function of one or more of the camera field of view, the angle of the camera to the normal ~~vertical~~ and the perpendicular ~~vertical~~ distance between the camera and the position of the ~~vehicle underside or~~ object to be inspected.

6.   (Currently Amended) Apparatus as claimed in ~~Claim 5~~ claim 5, wherein camera perspective altering means are provided which apply an alteration to the image frame calculated using ~~the~~ angle information ~~from~~ for each camera.

7.   (Currently Amended) Apparatus as claimed ~~in any preceding Claim~~ claim 1, wherein the images from each of said cameras are altered to the same scale.

8.   (Currently Amended) Apparatus as claimed in ~~Claim 6 or Claim 7~~ claim 6, wherein the camera perspective altering means models a shift in the angle and position of each camera relative to the others and determines an altered view from the camera.

9.   (Currently Amended) Apparatus as claimed in ~~any preceding Claim~~ claim 1, wherein the first module includes camera calibration means adapted to correct one or more of: spherical lens distortion, ~~and/or~~ non-equal scaling of pixels, and/or the skew of two image axes from the perpendicular.

10.   (Currently Amended) Apparatus as claimed ~~in any preceding Claim~~ claim 1, wherein the second module is provided with means for comparing successive ~~images~~ image frames from one camera in sequence to determine mosaicing parameters which define how image frames are ~~which allows the images~~ to be overlapped to produce the respective mosaic image.

11.   (Currently Amended) Apparatus as claimed in ~~Claim 10~~ claim 10, wherein a Fourier analysis of the images is conducted in order to obtain the translation of x and y pixels relating the ~~images~~ image frames.

12.   (Currently Amended) A method of inspecting an area of a moving ~~an~~ object, the method comprising the steps of:

(a) positioning ~~at least one camera~~ an array of cameras pointing in the general direction of the object, taking n image frames with each camera as the object passes over the array of cameras, ~~proximate to the object~~;

(b) acquiring a first frame from the at least one camera;

(C) acquiring the next frame from said at least one camera;

(d) applying calibration and perspective alterations to said frames;

(e) calculating and storing mosaic parameters for said frames;

(f) repeating steps (c) to (e) n-1 times; and

(g) mosaicing together the n frames from each ~~said at least one~~ camera into a single mosaiced image, characterized in that cameras in peripheral portions of the array are angled outward compared with cameras toward the center, the perspective correction in said step (d) being performed so as to correct the different camera angles prior to construction of said mosaiced image.

13.   (Currently Amended) A method as claimed in ~~Claim 12~~ claim 12, wherein the object is the underside of a vehicle the cameras pointing generally upwards from a position on the road surface.

14.   (Canceled)

15.   (Currently Amended) A method as claimed in ~~Claim 14~~ claim 12, wherein in step (d) ~~the predetermined~~ an effective position of each of said cameras is calculated as a function of at least one of the camera field of view, ~~and/or~~ the angle of the camera to the ~~vertical~~ normal, and/or the ~~vertical~~ perpendicular distance between the camera and the position of the ~~vehicle underside~~ object being inspected.

16.   (Currently Amended) A method as claimed in ~~anyone of Claims 12 to 15~~ claim 12, wherein images from each of said cameras are altered to the same scale.

17.   (Currently Amended) A method as claimed ~~in anyone of Claims 14 to 16~~ claim 12, wherein said perspective alteration applies a correction to the image frame calculated using relative position and angle information [[from]] for each camera.

18.   (Currently Amended) A method as claimed in ~~Claim 17~~ claim 17, wherein perspective alteration models a shift in the angle and position of each camera relative to the others and determines the altered view therefrom.

19.   (Canceled)

20.   (Canceled)

21.   (Currently Amended) A method as claimed in ~~Claim 20~~ claim 13, wherein the translation is determined by

(i) [[(a)]] Fourier transforming the original images;

(ii) [[(b)]] Computing the magnitude and phase of each of the images;

(iii) [[(c)]] Subtracting the phases of each image;

(iv) [[(d)]] Averaging the magnitudes of the images; and

(v) [[(e)]] Inverse Fourier transforming the result to produce a correlation image.

22.   (Canceled)

23.   (Currently Amended) A method as claimed in claim 12, further comprising: ~~of creating a reference map of an object the method comprising the steps of obtaining a single mosaiced image,~~

selecting an area of the single mosaiced image and recreating or selecting

the frame from which said area of the mosaiced image was created.

24.   (Currently Amended) A method as claimed in ~~Claim 23~~ claim 23, wherein

the area of the single mosaiced image is selected graphically by a user using a cursor on a

computer screen.

25.   (New) Apparatus as claimed in claim 10, wherein said second module is

arranged to use the mosaicing parameters obtained by comparison of image frames from said one

camera to determine how successive image frames from the other cameras of the array are to be

overlapped to produce said mosaic.

26.   (New) Apparatus as claimed in claim 25, wherein said one camera is

selected to be one which is angled outward but not an outermost camera of the array.

27.   (New) Apparatus as claimed in claim 1, wherein the second module is

arranged to construct said mosaic by mapping output pixel locations to locations in the image

frames prior to perspective correction and using the pixel data of the uncorrected image frames.

28.   (New) Apparatus as claimed in claim 1, wherein the mosaics from plural

cameras are combined as side-by-side for display as strips of a single image, without comparison

and mosaicing between image frames from different cameras.

29.   (New) Apparatus as claimed in claim 28, wherein the edges of said image

strips are blended together in said single image.

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30.   (New) Apparatus as claimed in claim 1, wherein the array of cameras is housed to be portable and operable without alteration of the road surface above which vehicles are to be inspected.

31.   (New) A method as claimed in claim 13, wherein width of the array of cameras is within the wheel spacing of the vehicle.